This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A non-naturally occurring recombinant DNA molecule comprising a sequence encoding a chelon protein which binds mercuric ions.

2. (Currently amended) The non-naturally occurring recombinant DNA molecule of claim 1 wherein the sequence encodes a chelon protein having the amino acid sequence given in amino acids 1 to 107 of SEQ ID NO:4.

3. (Original) The non-naturally occurring recombinant DNA molecule of claim 1 wherein the sequence encodes a chelon protein which binds cadmium as well as mercuric ion.

4. (Currently amended) The non-naturally occurring recombinant DNA molecule of claim 3 ~~having~~ wherein the chelon protein comprises an amino acid sequence selected from the group consisting of amino acids 1 to 107 of SEQ ID NO:4, amino acids 1 to 107 of SEQ ID NO:5, amino acids 1 to 107 of SEQ ID NO:6, amino acids 1 to 107 of SEQ ID NO:7, amino acids 1 to 107 of SEQ ID NO:8, amino acids 1 to 107 of SEQ ID NO:9; amino acids 1 to 107 of SEQ ID NO:10; amino acids 1 to 107 of SEQ ID NO:11; and amino acids 1 to 107 of SEQ ID NO:12.

5. (Original) A host cell transformed or transfected to contain the recombinant DNA molecule of claim 1.

6. (Original) A host cell transformed or transfected to contain the recombinant DNA molecule of claim 3.

7. (Currently amended) The transformed or transfected host cell of claim 6, wherein the chelon protein which is ~~encodes has~~ comprises the amino sequence given in amino acids 1 to 107 of SEQ ID NO:4.

8. (Currently amended) The transformed or transfected host cell of claim 6, wherein the chelon protein which is encoded ~~has~~ comprises the amino sequence selected from the group consisting of ~~SEQ ID NO:4,~~ amino acids 1 to 107 of SEQ ID NO:5, amino acids 1 to 107 of SEQ ID NO:6, amino acids 1 to 107 of SEQ ID NO:7, amino acids 1 to 107 of SEQ ID NO:8, amino acids 1 to 107 of SEQ ID NO:9; amino acids 1 to 107 of SEQ ID NO:10; amino acids 1 to 107 of SEQ ID NO:11; and amino acids 1 to 107 of SEQ ID NO:12.

9. (Currently amended) A method for recombinantly producing a chelon protein in a host cell, said method comprising the steps of:

a) infecting or transforming a host cell capable of expressing a chelon coding sequence with a vector comprising a promoter active in said host cell operably linked to a coding region for said chelon ~~having~~ comprising an amino acid sequence as selected from the group consisting amino acids 1 to 107 of SEQ ID NO:4, amino acids 1 to 107 of SEQ ID NO:5, amino acids 1 to 107 of SEQ ID NO:6, amino acids 1 to 107 of SEQ ID NO:7, amino acids 1 to 107 of SEQ ID NO:8, amino acids 1 to 107 of SEQ ID NO:9; amino acids 1 to 107 of SEQ ID NO:10; amino acids 1 to 107 of SEQ ID NO:11; and amino acids 1 to 107 of SEQ ID NO:12 to produce a recombinant host cell; and

b) culturing the recombinant host cell under conditions wherein said chelon is expressed.

10. (Currently amended) A method for removing divalent mercury, divalent cadmium, cobalt, copper, lead, nickel or zinc cations from a source comprising ~~divalent mercury or cadmium~~ said cations, said methods comprising the step of contacting the source with a MerR or chelon protein, whereby the MerR or chelon protein binds the divalent mercury, divalent cadmium, cobalt, copper, lad, nickel or zinc cations.

11. (Currently amended) The method of claim 10 wherein the chelon protein has an amino acid sequence selected from the group consisting of amino acids 1 to 107 of SEQ ID NO:4, amino acids 1 to 107 of SEQ ID NO:5, amino acids 1 to 107 of SEQ ID NO:6, amino acids 1 to 107 of SEQ ID NO:7, amino acids 1 to 107 of SEQ ID NO:8, amino acids 1 to 107 of SEQ ID NO:9; amino acids 1 to 107 of SEQ ID NO:10; amino acids 1 to 107 of SEQ ID NO:11; and amino acids 1 to 107 of SEQ ID NO:12.

12. (Original) The method of claim 10 wherein the MerR or chelon protein is bound to a solid substrate and the source is an aqueous material.

13. (Original) The method of claim 10 wherein the MerR or chelon protein is expressed in a transgenic plant cell, transgenic plant tissue or transgenic plant.

14. (Currently amended) The method of claim 13 wherein the chelon has an amino acid sequence selected from the group consisting of amino acids 1 to 107 of SEQ ID NO:4, amino acids 1 to 107 of SEQ ID NO:5, amino acids 1 to 107 of SEQ ID NO:6, amino acids 1 to 107 of SEQ ID NO:7, amino acids 1 to 107 of SEQ ID NO:8, amino acids 1 to 107 of SEQ ID NO:9; amino acids 1 to 107 of SEQ ID NO:10; amino acids 1 to 107 of SEQ ID NO:11; and amino acids 1 to 107 of SEQ ID NO:12.

15. (New) A chelon protein having an amino acid sequence selected from the group consisting of amino acids 1 to 107 of SEQ ID NO:4 , amino acids 1 to 107 of SEQ ID NO:5, amino acids 1 to 107 of SEQ ID NO:6, amino acids 1 to 107 of SEQ ID NO:7, amino acids 1 to 107 of SEQ ID NO:8, amino acids 1 to 107 of SEQ ID NO:9, amino acids 1 to 107 of SEQ ID NO:10, amino acids 1 to 107 of SEQ ID NO:11 and amino acids 1 to 107 of SEQ ID NO:12.

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16. (New) The method of claim 12 wherein the chelon protein is bound to a solid support.